

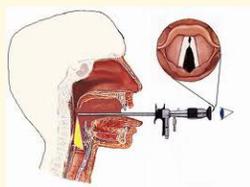
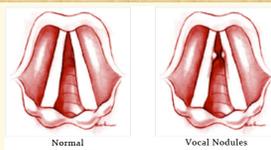
Glottal Fry as a Therapy Technique for Vocal Nodules: A Case Study



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What are Vocal Nodules?

- ❖ Nodules are benign growths on the vocal folds, usually related to vocal abuse
- ❖ Negative reaction to stress of frequent, hard contact of the vocal folds
- ❖ High-Risk Individuals:
 - ❖ Women
 - ❖ Children
- ❖ Various Stages
 - ❖ Early – small, soft, pliable tissue
 - ❖ Chronic – larger, hardened, fibrous tissue
- ❖ Diagnosed through evaluation by ENT and SLP
 - ❖ Stroboscopy



How Nodules Affect the Voice

- ❖ Causes different vibratory characteristics of the vocal folds
 - ❖ Prevents full closure during vibration
 - ❖ Leads to aperiodicity in the vibratory cycle
- ❖ Consequences
 - ❖ Raspy, breathy voice
 - ❖ Lower pitched voice

Techniques to Reduce and/or Eliminate Nodules

- ❖ Voice Therapy*
 - ❖ Vocal hygiene education
 - ❖ Teaching the patient coping strategies
 - ❖ Teaching the patient to safely use his/her voice
 - ❖ Tension reduction techniques
 - ❖ Address breath support (if necessary)
 - ❖ Resonant voice therapy
- ❖ Surgery
 - ❖ Rare cases
- ❖ *Generally effective, if completed by the patient with some diligence

Problem

- ❖ Patients often do not complete therapy techniques outside of the therapy sessions
 - ❖ Leads to prolonged treatment periods and poorer treatment outcomes
- ❖ *Glottal fry has been suggested as a potential treatment method, but there is limited data available regarding its effectiveness*

What is glottal fry and how does it work?

- ❖ The lowest vocal register
 - ❖ Vocal folds slowly vibrate, reducing stress on the tissue
 - ❖ Vocal folds are shortened, relaxing the tissue
- ❖ Large movements cause fibrotic tissue of the nodule to vibrate, loosening it
 - ❖ Vibration of this tissue could lead to a reduction in the size of nodules

Research Question

- ❖ Is vocal fry, added to traditional voice therapy, more effective in treating vocal nodules than traditional therapy alone?
- ❖ This research explores:
 - ❖ The role of glottal fry in conjunction with traditional vocal nodule therapy
 - ❖ How glottal fry impacts the reduction and/or elimination of vocal nodules

References

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Methodology

Participants

- ❖ Normative pool created through retrospective clinic chart review
 - ❖ Individuals who received treatment for nodules using traditional techniques
- ❖ Case study S
 - ❖ College-aged female singer, diagnosed with vocal nodules
 - ❖ Received traditional voice therapy + glottal fry exercises at home (completed 10x daily for ~2 minutes each time)

Procedures

- ❖ Normative group
 - ❖ Gathered voice recordings and stroboscopy videos from pre- and post-therapy
- ❖ Case study S
 - ❖ Recorded voice and stroboscopy samples pre- and post-therapy
 - ❖ Gathered patient self-perceptions on Voice Handicap Index and effort rating scale
 - ❖ All audio and video samples randomized and rated by two licensed SLPs
 - ❖ Audio samples analyzed for acoustic measures (jitter, shimmer, NHR)

Data Analysis

- ❖ Voice samples and stroboscopy videos compared between Case S and normative pool

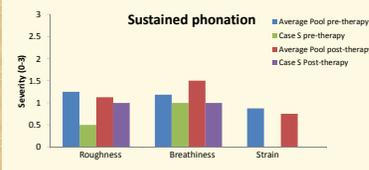
Major Findings

Can patients complete glottal fry exercises with this frequency?

- ❖ S received voice therapy for 6 weeks, throughout which she completed glottal fry exercises
 - ❖ Average: 7.8/10 times per day

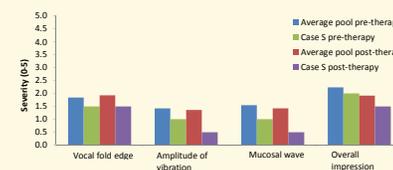
Do glottal fry exercises impact perceptual voice qualities?

- ❖ No major differences between normative pool and Case S
- ❖ All relatively mild cases



Do glottal fry exercises impact nodule size and vibratory characteristics?

- ❖ No major differences between normative pool and Case S
- ❖ All relatively mild cases

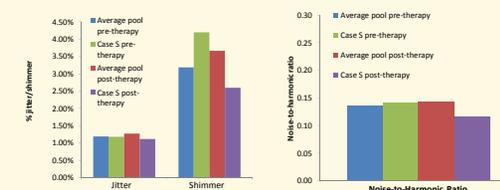


What were the Case S's perceptions?

- ❖ No major change in effect of voice on daily activities
- ❖ Reduction in effort
- ❖ Self-perceived improvement in voice quality

Do glottal fry exercises impact acoustic measures of voice?

- ❖ Slight improvement in perturbation measures (increase periodicity of vibration)



Conclusions

Is glottal fry effective for treating vocal nodules?

- ❖ Maybe!
- ❖ Small changes in some measures (stroboscopy and acoustic)
- ❖ **Participant perceptions**
 - ❖ Often the most important component of therapy, as it is critical that patients "buy-in" to the process and feel as if they are receiving the purported benefits
- ❖ Simplicity of glottal fry (increased compliance from patients)